Chapter 3.2 ASSESSMENT METHODOLOGY (305(b)/303(d) ASSESSMENT PROCESS)

Virginia's biennial water quality assessment is conducted by the Department of Environmental Quality (DEQ), with the assistance of the Department of Conservation and Recreation (DCR), to determine the water quality conditions in the Commonwealth. The results of this water quality analysis are reported to the EPA in the 305(b) Water Quality Assessment Report submitted on April 1 of even numbered years. The 305(b) report describes the aggregated water quality conditions of the State. The 303(d) report contains the individual listing of those waters that have been identified as "impaired"(partially supporting or not supporting designated uses). EPA compiles the data from all of the State reports into a national water quality status report that is presented to Congress. All assessment determinations are made according to the 2002 Water Quality Assessment Guidance Manual except on a case by case basis. The manual can be found on the DEQ website: **http://www.deq.state.va.us/water/reports.html**

In 1998, EPA made a number of important changes to the water quality assessment process which continue to remain in effect. With strong support from the States, EPA changed the data analysis period from two to five years. An important benefit of this change is the increase in the data set size from approximately 8 to 20 samples based on quarterly monitoring and from 24 to 60 samples based on monthly monitoring.

The assessment begins by analyzing the data from ambient water quality, biological, sediment and fish tissue monitoring and/or other special studies. The results of these comprehensive data analyses are compared to both numeric and narrative criteria related to the designated uses contained in the Water Quality Standards (WQS). The WQS are provisions of State and/or Federal Law that contain both numeric and narrative criteria for protecting the designated uses of all waters in the Commonwealth.

There are two basic types of water quality data used in the assessment process. The first type of data is **"monitored"** data. This data comes from the collection and analysis of chemical, biological, and/or physical samples taken by DEQ and/or any approved data submitted by the U.S. Geological Survey, TVA, U.S. Forest Service, Chesapeake Bay Program, Quality Assured/Quality Controlled (QA/QC) citizen monitoring programs and/or other special studies. For the 303(d) Impaired Waters list, normally only QA/QC approved "monitored" data are used to classify waters "impaired" due to the assessment confidence associated with the QA/QC monitoring requirements. Monitored data is obtained using EPA accepted and DEQ approved protocols. All non-DEQ monitoring submittals, except USGS chemical data submittals, must provide a sampling protocol and all field data. If data discrepancies or other suspect information is generated, a field verification audit will be conducted by DEQ monitoring staff. Additional information concerning the assessment and use of Citizen Monitoring data can be found in the Assessment Guidance Manual.

The second type of data used in the assessment is called **"evaluated"** data. These physical, chemical and/or biological data are primarily obtained from sources where there is not an EPA accepted and/or DEQ approved sampling and analysis protocol. Evaluated data may also include "land use" analysis, volunteer sampling and monitoring and/or other such information for which the data does not meet the (QA/QC) procedures or requirements. Additionally, waters that were on the 1998 303d list but do not have any additional monitoring data for the 2002 assessment period will be considered evaluated and assessed the same as the previous assessment. Segments, where evaluated data potentially indicate water quality degradation, should be designated fully supporting but threatened for associated individual designated uses. Additional monitoring efforts should be targeted for these waters as resources allow.

The following approval process will be used for non-DEQ "monitored" data protocol and QA/QC procedure review:

All ancillary data that have been received and reviewed by DEQ and found acceptable should be used for 305(b) and 303(d) assessment. The data are from two categories, state/federal agencies (other than DEQ) and the Citizen Monitoring program. The approval process for data from the Citizen Monitoring Program is addressed in Part VI, Section 6.3.1 of the Guidance Manual. The following addresses the approval process for data from state and federal agencies.

All “monitored” chemical and biological data must be supported by EPA accepted monitoring protocols. QA/QC procedures must also be reviewed and approved by DEQ. As assessment staff becomes aware of data sources, those parties generating data for DEQ 305b/303d assessment consideration should be requested by the assessment staff to submit QA/QC plans, standard operating procedures (SOPs), and monitoring procedures to the DEQ 305(b) Coordinator. The 305(b) Coordinator will provide copies of supporting documentation for chemical data to QA/QC review staff in the Water Quality Monitoring and Assessment (WQMA) program and provide copies of all supporting documentation for biological monitoring of freshwater benthic macroinvertebrates to the Water Quality Standards staff.

The DEQ staff does not consider, for use in assessment, any non-agency biological monitoring data other than benthic macroinvertebrate. For 305(b) assessment purposes, DEQ has not reviewed and approved monitoring protocols and QA/QC procedures used by other state and federal agencies and insufficient information are available to allow approval for the verbatim use of these data and/or assessments from these sources in the 305(b) cycle. However, information from these sources may be independently assessed by regional biologists to determine their acceptability for 305(b) assessment purposes on an individual basis. Copies of the supporting documentation for freshwater benthic data will be provided to the regional offices where the surveyed sites are located for review by the regional biologist. The regional biologists are most familiar with the various ecoregions in the state and are knowledgeable with what constitutes appropriate reference sites, conditions or benthic metrics that are acceptable for assessing streams in these ecoregions. Because of their expertise with their ecoregions, regional biologists are the best judges of the acceptability of benthic data produced by “other” data generators. The regional biologists will review the available data and make a determination regarding the acceptability of the data for assessing the benthic community at any particular site. The regional biologists will provide any comments or requests for additional information directly to the data generators and will copy such communications to Water Quality Standards staff. Copies of the review results shall be distributed to the regional staff and 305(b) Coordinator.

If the protocols involve estuarine toxics data and/or biological assessements in tidal environments, supporting documents should be provided to and reviewed by the Chesapeake Bay Program staff.

All comments concerning toxics data, chemical (SOPs) and/or QA/QC plans will be coordinated through the WQMA QA/QC review staff. WQMA QA/QC staff is responsible for providing comments to data generators and 305(b) Coordinator concerning the acceptability of SOPs and QA/QC documentation for chemical data.

If a chemical, biological or tidal waters data package can not be used in the assessment process, the appropriate DEQ staff will provide the data generator an explanation for the data not being useable.

DESIGNATED USES of VIRGINIA’S WATERS

The 305(b) process assesses a total of 5 designated uses based on the applicability of the Water Quality Standards on a particular waterbody. The designated uses are aquatic life use, swimming use, fish consumption use, shellfish consumption use and drinking water use. Swimming use is assessed to represent the primary (swimming) and secondary (boating) water contact recreational use. Drinking water use is based on attainment of public water supply criteria. Following are details relating to the assessment of the five designated uses of Virginia’s waters.

1. <u>Aquatic Life Use:</u>

Aquatic life use includes the propagation, growth, and protection of a balanced indigenous population of aquatic life (including game and marketable fish) which may be expected to inhabit the waters.

Support of aquatic life use can be determined by the assessment of conventional parameters (dissolved oxygen, pH and temperature except in tidal waters); toxic pollutants in the water column, toxic pollutant analysis of sediments, nutrient analysis and/or the biological assessment of benthic communities.

2. Fish Consumption Use:

Fish consumption use includes the propagation, growth and protection of a balanced population of aquatic life including game and marketable fish.

Support of this use is determined using two separate criteria. First, support or lack thereof, is based on human health related advisories and/or restrictions issued by the Virginia Department of Health (VDH). Impairment for fish consumption results when the public is advised by VDH that fish consumption is prohibited for the general population or there is an "advisory" that certain fish species should not be consumed by the general population or sub-populations at greater risk, such as children and/or pregnant women.

Second, the criteria used for fish consumption use is a comparison of fish tissue data to state screening values for toxic pollutants. Any single observation above the screening value results in assessment of the water as fully supporting but threatened. Two or more exceedences of a particular screening value listed in Table 6(a) of the Assessment Guidance Manual results in assessment of the water as partial supporting.

3. Shellfish Consumption Use:

Shellfish consumption use includes the propagation, growth and protection of a balanced population of aquatic life including marketable shellfish.

Support of this use is also determined using two separate criteria. First, the Division of Shellfish Sanitation (DSS) of the VDH bases support or lack thereof on a classification system designed for the harvesting and marketing of shellfish resources in accordance with Food and Drug Administration (FDA) guidelines. Four classifications are used to describe shellfish waters. They are approved, conditionally approved, restricted, and prohibited. ***Approved*** areas are waters from which shellfish may be taken for direct marketing at all times. ***Conditionally approved*** (seasonal condemnation) areas are waters where the quality may be affected by a seasonal population increase or sporadic use of a dock or harbor facility. ***Restricted*** (condemnations) areas are waters where a sanitary survey indicates a limited degree of pollution which makes it unsafe to market shellfish for immediate consumption. Shellfish harvested in these areas must be moved to an approved area for a certain length of time to allow for depuration before marketing. ***Prohibited*** (condemnations) areas are waters where the DSS sanitary survey indicates dangerous numbers of pathogenic microorganisms or other contaminants that impact the area. Shellfish cannot be harvested or relayed for purification in prohibited areas.

Shellfish waters where restrictions or prohibitions are due solely to a discharge outfall but not due to water quality violations will not be listed in the 303d report. In these cases, the designated use has been administratively removed through the issuance of a discharge permit.

4. **Swimming Use**:

Swimming use assessment includes swimming and other primary and secondary water contact recreation uses such as water skiing and pleasure boating.

Support or lack thereof of this use is based on a comparison of fecal coliform bacteria data to the instantaneous fecal coliform standard (1000fecal coliform bacteria per 100millilitersl) using the EPA percent assessment method. However, if a special study, designed to collect multiple data points within a 30-day period is conducted, then these results should be compared to the geometric mean criterion (200 fecal coliform bacteria per 100 milliliters).

Any VDH beach closures should be assessed according to Part V.

5. Public Water Supply Use:

Waters that are used for public drinking water supply are identified in the Water Quality Standards and are protected by additional health related standards that are applicable to these waters. Support or lack thereof of this use is based on Virginia Department of Health (VDH) closures or advisories and/or a comparison of water column data to applicable public water supply criteria.

Table 3.2-1 is a summary of the designated uses and the criteria used to assess the individual uses.

Table 3.2-1 DESIGNATED USE MATRIX

NO.	DESIGNATED USE	SUPPORT OF USE ASSESSMENT CRITERIA
1.	Aquatic Life Use	Conventional Pollutants (Dissolved Oxygen, pH, Temp.); Toxic contaminants in water column; Toxic contaminants found in sediments exceeding NOAA's Effects Range-Medium value; Biological evaluation.
2.	Fish Consumption Use	Advisories, limiting consumption, or restrictions issued by Virgina Department of Health (VDH); Comparison of fish tissue data to state screening values for toxic pollutants found in Tables 6(a) and 6(b) of the Water Quality Assessment Guidance Manual
3.	Shellfish Consumption Use	Restrictive actions for harvesting and marketing of shellfish resources made by Div. Of Shellfish Sanitation of VDH
4.	Swimming Use	Conventional Pollutant (Fecal Coliform Bacteria) and/or VDH beach closures.
5.	Public Water Supply Use	Closures or advisories by VDH; comparison of data to applicable public water supply standards.

CRITERIA TO DETERMINE DEGREE OF USE SUPPORT

Virginia bases its water quality assessment on the ability of the waters to support the five designated uses. Support is based on the waters meeting the criteria for each use based on the numeric and/or narrative Water Quality Standards. The following is a description of the criteria used to determine the quality of the waters relating to each of the designated uses, and thereby the degree of use support that will be presented in the 305b/303d reports.

1. Fully Supporting

The following is a description of the types of data and the acceptable criteria used to assess waters as fully supporting the designated uses.

- *Conventional Parameters*:

Waters fully supporting the designated uses can have up to 10% violations of water quality standards for the conventional parameters fecal coliform bacteria, (swimming use) dissolved oxygen, temperature, and pH (aquatic life use) without negatively affecting the designated uses. This criteria is based on EPA guidance which recommends that the States use a violation rate of these standards in the 0-10% range and designate as fully supporting the aquatic life and swimming designated uses. Any single exceedence in a small dataset (2-9 samples) will be assessed as fully supporting. A single sample will not be assessed.

The Water Quality Standards (9 VAC 25-260-50) criteria for D.O., pH and Temperature do **not** apply below (7Q10). 7Q10 is the lowest flow averaged (arithmetic mean) over a period of seven consecutive days that can be statistically expected to occur once every 10 climatic years (a climatic year begins April 1 and ends March 31). Data from these parameters that are from flow conditions below 7Q10 should not be used in the assessment.

- *Toxic Pollutants:*

For toxic pollutant assessment in free-flowing streams, waters where there are no exceedences of a Water Quality Standard acute criteria within a 3-year period are considered fully supporting for aquatic life. For public water supply and other human health related use (i.e. fish consumption), no exceedences of a Water Quality Standard criteria or a fish tissue screening value are considered fully supporting for drinking water and fish consumption uses.

For toxic pollutant assessment in estuarine waters, where there are several types of toxic data available, a weight of evidence approach has been initiated.

- *Fish Tissue/Sediment Contamination*

No exceedences of a state screening value (fish tissue) or ER-M (sediment) screening value are considered fully supporting.

- *Biological Evaluation*:

For free-flowing stream biological community assessment, data for the overall assessment period is rated as not impaired where no biological assemblage (e.g. macro invertebrates) has been modified significantly beyond the natural range of reference conditions based on EPA Rapid Bioassessment Protocol (RBP) II methodology.

For estuarine biological community assessment, sampling results are characterized using the biological index of biotic integrity (B-IBI) developed and used by the Chesapeake Bay Program. This approach is based on a comparison of biological sampling data to reference sites that were deemed minimally impacted by low dissolved oxygen events and sediment contaminants. Waters are considered fully supporting aquatic life use if ≤10% of the samples within the segment have a B-IBI score < 2.0

- *Fish Advisories*:

Waters where the VDH has not issued any fish advisories or prohibitions and no human health standards or no state screening values have been exceeded. Unless otherwise noted, all state waters are considered fully supporting fish consumption use.

- *Shellfish Advisories*:

Those growing areas where no restriction or prohibition (condemnation) on shellfish harvesting is imposed as indicated by the Department of Shellfish Sanitation (DSS) summary dated January, 2001.

- *Beach Closures:*

No VDH beach closures during the assessment period.

- *Public Water Supply Source Closures:*

No VDH public water supply source closures during the assessment period.

2. <u>Fully Supporting but Threatened</u>

The following is a description of the types of data and the acceptable criteria used to assess waters as fully supporting but threatened for the designated uses. <u>It is the intent of the agency to focus additional monitoring resources on the waters that are identified as threatened, based on initial monitoring data analysis.</u>

- *Conventional Parameters*:

Not Applicable

- *Toxic Pollutants:*

For toxic pollutant assessment in free-flowing streams, waters where there are no more than one exceedence of a Water Quality Standard acute criteria within a 3-year period are considered fully supporting but threatened for aquatic life

For toxic pollutant assessment in estuarine waters, where there are several types of toxic data available, a weight of evidence approach has been initiated.

- *Fish Tissue/Sediment Contamination:*

Waters exceeding a single state screening value (SV) found in Tables 6(a) or 6(b) for fish tissue or Effects Range-Medium (ER-M) value for sediment, are fully supporting but threatened for fish consumption and aquatic life, respectively. If an ER-M value does not exist, then the 99th percentile value is used.

- *Biological Evaluation*:

For free-flowing waters, biological community data for the assessment period with a single rating of moderately impaired using RBP-II methodology should be considered fully supporting but threatened where professional judgement cannot confirm impairment. Additionally, waters should be considered fully supporting but threatened where, through best professional judgement, evaluated biological data reveals potential water quality problems. For waters assessed as fully supporting but threatened for aquatic life use, it is necessary for another biological assessment to be scheduled to make a final aquatic life use determination.

For estuarine biological community assessment, waters are considered threatened for aquatic life use if > 10% of the samples within the segment have a B-IBI score < 3.0.

- *Fish Advisories:*

Virginia Department of Health fish consumption advisories, where a general advisory has been issued but fish consumption is not limited are considered fully supporting but threatened.

- *Shellfish Advisories:*

Those growing areas, as indicated by the DSS summary dated January, 2001, that have been classified as conditionally approved (seasonal condemnations) are considered fully supporting but threatened. Additional information on shellfish assessment and consumption use is contained in Part VI, Section 6.4.3 of the Assessment Guidance Manual.

- *Beach Closure*:

One, short term (less than one week in duration) VDH beach closure within the 5 year assessment cycle with a low probability, based on best professional judgement, that the pollution will reoccur is considered fully supporting but threatened. Best professional judgement decisions could be based on the source of the pollution causing the closure being generally transient and there are no VDH plans to implement pollution reduction measures or controls.

- *Public Water Supply Source Closure:*

One, short term VDH public water supply source closure during the 5 year assessment cycle with a low probability that the pollution will reoccur are considered fully supporting but threatened. The source of the pollution is generally transient and there are no VDH plans to implement pollution reduction measures or controls.

- *Other Criteria for Placing Waters in the Threatened Category*

Waters for which “evaluated” data, trend analysis, or other water quality indicators show an apparent decline in water quality or a potential for water quality problems. Waters can be designated as threatened where there is a possible loss of a designated use documented by ancillary data such as recurrent fish kills or pollution potential documented by non-agency studies or reports. Additionally, waters that have > 10% exceedence rate for nutrients and/or are listed in WQS as “nutrient enriched” are considered fully supporting but threatened for aquatic life use. For monitoring purposes, all threatened waters should be considered for continued monitoring during the next reporting period.

3. <u>Partially Supporting</u>

The following is a description of the types of data and the acceptable criteria used to assess waters as partially supporting the designated uses.

- *Conventional Parameters*:

Waters with long term or chronic problems based on the assessment of monitored data are considered partially supporting. For conventional parameters, at least two violations of water quality standards and exceedences in the 11-25% range are considered a long term or chronic problem and considered partially supporting. Waters with violations in this range are capable of supporting some of the designated use according to EPA guidance.

- *Toxic Pollutants:*

For toxic pollutant assessment in free-flowing streams, waters where there are 2 exceedences of a Water Quality Standard acute criteria in a 3-year period are considered partially supporting for aquatic life use. For public water supply use, any exceedences of human health criteria are considered partially supporting.

For toxic pollutant assessment in estuarine waters, where there are several types of toxic data available, a weight of evidence approach has been initiated.

- *Fish Tissue Contamination:*

Waters with fish tissue exceeding the same state screening value (SV), listed in Table 6(a), 2 or more times are partially supporting for fish consumption. For example, both of the following situations would qualify as partially supporting under these criteria: two fish samples from different species during one sampling event or two or more samples of the same or different species from different sampling events.

- *Biological Data*:

For free-flowing waters, the biological community survey data are confirmed to be moderately impaired, and are considered partially supporting. Based on professional judgement and/or other supplemental data, a second survey may be required to confirm moderate impairment. In this case, the initial assessment would be considered fully supporting but threatened and follow-up monitoring scheduled.

For estuarine biological community assessment at fixed stations, waters are considered partially supporting for aquatic life use if 11-25% of the samples within the segment have a B-IBI score < 2.0. Random B-IBI stations will not be considered partially supporting due to minimum confidence levels with random data, especially small datasets within large, open water segments. These stations will be considered fully supporting but threatened until DEQ can establish acceptable confidence level criteria.

- *Fish Advisories:*

Virginia Department of Health fish consumption advisories, where fish consumption is limited for “at risk” individuals such as young children or pregnant women, are considered violations of the general Water Quality Standard and therefore considered partially supporting. Waters, where fish consumption is limited and/or restricted but not completely prohibited, are considered partially supporting.

- *Shellfish Advisories*:

Those growing areas, as indicated by the DSS summary dated January, 2001, that have been classified as restricted (condemnations) are considered partially supporting. The loss of shellfish resource in restricted areas is a partial loss of use since the DSS allows harvesting and marketing after relay for cleansing of contamination. Restricted areas that have been administratively condemned due solely to the presence of a VPDES permitted out-fall will not be included in the 303d impaired waters list.

- *Beach Closures:*

One or more VDH beach closures of less than one-week duration within the assessment cycle with a medium probability, based on best professional judgement, the pollution will reoccur. There are VDH plans to implement pollution reduction measures or controls.

- *Public Water Supply Source Closure*:

One or more VDH public water supply source closures within the assessment cycle with a medium probability that the pollution will reoccur. There are plans to implement pollution reduction measures or controls.

4 Not Supporting

The following is a description of the types of data and the acceptable criteria used to assess waters as not supporting designated uses.

- *Conventional Parameters*:

Waters with severe long term or chronic problems based on the assessment of monitored data. For waters with conventional parameters, at least two violations of water quality standards and exceedences of greater than 25% do not support the aquatic life use.

- *Toxic Pollutants:*

For toxic pollutant assessment in free-flowing streams, waters where there are 3 or more exceedences of a Water Quality Standard acute criteria in a 3-year period is considered not supporting for aquatic life use. For public water supply use, 2 or more exceedences of the human health criteria is considered not supporting.

For toxic pollutant assessment in estuarine waters, where there are several types of toxic data available, a weight of evidence approach has been initiated.

- *Biological Data*:

Free-flowing waters are considered not supporting when biological community data for the assessment period is rated as severely impaired using the RBP-II survey.

For estuarine biological community assessment of fixed stations, waters are considered not supporting for aquatic life use if >25% of the samples within the segment have a B-IBI score < 2.0. Random B-IBI stations will not be considered not supporting due to minimum confidence levels with random data, especially small datasets within large, open water segments. These stations will be considered fully supporting but threatened until DEQ can establish acceptable confidence level criteria.

- *Fish Consumption Advisories:*

Virginia Department of Health fish consumption prohibitions are considered violations of the general water quality standard and are not supporting due to the loss of the designated use.

- *Shellfish Advisories:*

Those growing areas, as indicated by the DSS summary dated January, 2001, that have been classified as prohibited (condemnations) are considered not supporting. The loss of shellfish resource in prohibited areas is a complete loss of use due to the presence of excess pathogen indicators or other human health related pollutants. Prohibited areas that have been administratively condemned due solely to the presence of a VPDES permitted out-fall will not be included in the 303d impaired waters list.

- *Beach Closures:*

One or more VDH beach closures, of more than one-week duration during the assessment period, with a high probability, based on best professional judgement, that the pollution will reoccur and additional closures will result. VDH initiates plans to implement pollution reduction measures or controls.

- *Public Water Supply Source Closure:*

One or more VDH public water supply source closures with a high probability that the pollution will reoccur. There are VDH plans to implement pollution reduction measures or controls.

Table 3.2-2 summarizes the designated use assessment criteria.

Table 3.2-2 Designated Use Assessment Criteria

	Fully Supporting	**Fully Supporting but Threatened**	**Partially Supporting**	**Not Supporting**
Conventional Parameters Aquatic Life Use Support (ALUS) and Swimming Use (temperature will not be assessed in tidal waters)	AR ≤10%	Not Applicable Nutrient screening values exceeded > 10% or designated "Nutrient Enriched Waters"	AR > 1 exceedence and 11% = AR ≤ 25%	AR >1 exceedence and > 25%
Toxic Pollutants in Water Column and Sediment Aquatic Life Use Support (ALUS)	No exceedences	No more than 1 exceedence of acute criteria in a 3 year period (water column only) One or more ER-M SV or if no ER-M exists, 99th percentile SV exceed (sediment only)	2 exceedences of acute criteria in a 3-yr period (water column only)	3 or more exceedences of acute criteria in a 3-yr period (water column only)
Toxic Pollutants related to human health (PWS & Fish Consumption)	No exceedences	A single exceedence of any state SV for fish tissue	1 exceedence of human health criteria (PWS) 2 or more exceedences of the same state SV, listed in Table 6(a), for fish tissue	2 or more exceedences of the human health criteria (PWS) NA for fish tissue
Biological Data	Freshwater: Fully Supporting or Slightly Impaired Estuarine: Samples having ≤ 2.0 B-IBI score are AR ≤ 10%	Freshwater: Unconfirmed, Moderately Impaired, Evaluated data show potential WQ problems Estuarine: Samples having ≤ 3.0 B-IBI score are AR > 10%	Freshwater: Confirmed Moderately Impaired **Fixed Station** Estuarine: Samples having ≤ 2.0 B-IBI score are 11% ≤ AR ≤ 25%	Freshwater: Severely Impaired **Fixed Station** Estuarine: Samples having ≤ 2.0 B-IBI score are AR > 25 %
Fish Consumption Advisories or Restrictions	No restrictions or prohibitions	A VDH advisory which does not limit consumption is in effect	A VDH advisory limiting consumption is in effect	A VDH restriction prohibiting consumption is in effect
Shellfish Advisories	No restrictions or prohibitions	Area classified as Conditionally Approved (seasonal condemnations)	Areas classified as Restricted: Excluding VPDES out-falls	Areas classified as Prohibited; Excluding VPDES out-falls
Swimming Use (see Conventional Parameter criteria) And Beach Closures	No exceedences	One short term VDH closure with low probability of recurrence (pollution source transient and no VDH plans to implement any control measures)	One or more VDH closure with medium probability of recurrence (VDH preparing plans to implement controls measures)	One or more VDH closure with high probability of recurrence (VDH implement controls measures)

Public Water Supply (PWS) Source Closures	No closures	One VDH closure with low probability of recurrence (no VDH plan to implement control measures)	One or more VDH closure with medium probability of recurrence (VDH preparing plans to implement controls measures)	One or more VDH closure with high probability of recurrence (VDH must initiates control measures)

AR = arithmetic exceedence rate
SV = screening value
ER-M = effects range – medium value
ALUS = Aquatic Life Use Support
PWS = Public Water Supply